

Start, Design and Market Your Engines

Honeywell, SAE team up for unique middle school initiative

Matthew Jaster, Associate Editor



The Honeywell/SAE Student Automotive Design Challenge allowed students the opportunity to research, design, test and build electric, gear-driven toy cars (courtesy of Honeywell International).

According to Matthew Miller, director, Society of Automotive Engineers (SAE) Foundation and pre-college programs, there are only two groups in the world that consider engineers rock stars: "Other engineers and 11 to 14-year-olds."

Kids in this age group are endlessly curious about how things are made, what it takes to make them and how they can be made better. During a time when there seems to be less interest in Science, Technology, Engineering and Mathematic (STEM) programs, there are still companies and organizations trying to influence the next generation to consider careers in these fields.

Honeywell International partnered with the SAE to specifically address engineering education in the classroom with the Student Automotive Design Challenge. This program, based on SAE's A World in Motion (AWIM) "Motorized Toy Car" curriculum, provides students an assignment from a mock corporation to research, design, test and build electric, gear-driven toy cars.

"Last year, we partnered with the SAE for the Student Automotive Design Challenge to get students excited about science and math," says Joe Toubes, vice president of communications for Honeywell Transportation Systems. "Students work in design teams of four to build a vehicle and write proposals, draw sketches, model designs and develop plans that meet the specific set of design requirements



Students were asked in the 2009 competition to incorporate a green component in the toy design (courtesy of Honeywell International).

identified in market research. Students share their results with their international peers via an online forum, designed to directly connect students at a global level."

Toubes hopes the program will prompt students to continue to pursue an interest in engineering or at the very least an appreciation for the work it takes to design and build a product.

"We need talented innovators to find new and better ways to meet the challenges of today and tomorrow, not



Design teams of four were instructed to create a toy car product for a mock corporation (courtesy of Honeywell International).

just for our company, but for the world," Toubes says.

During the final week of the program, each class was asked to select the winning car, which was then entered into the global contest against other schools. The top three vehicles in the competition were selected by Honeywell employees through an online survey. The Student Automotive Design Challenge expanded in 2009 to include schools from China, the Czech Republic, France, Germany, India, Mexico, Switzerland and the United States.

"The international component adds a level of interest and prestige for the students and schools. They are very excited about interacting with other students from around the world. Kids who would normally never have the opportunity to interact are coming together around an engineering program, which is pretty cool from our perspective," Toubes says.

Toubes adds that the international component has also been beneficial for Honeywell.

"Since we are committed to improving the communities where our employees live and work, we're excited to offer

the program, not only to local communities, but also to our dedicated employees who have been going into the classroom weekly for the duration of this two month program."

A green component was also added to this year's competition where students either had to use recycled materials, materials that can easily be reused or have a "green" concept behind the design of the vehicle itself.

"We've been impressed by how innovative the students have been," Toubes says. "Each school has taken the challenge to heart and has produced excellent work. Kids today seem to be interested in how engineering can be utilized to develop new and cleaner technologies."

After viewing the most recent designs, Miller at the SAE is not as concerned about the future of engineering as he used to be.

"The future is so bright in engineering and manufacturing. These kids brought creativity, innovation and a real sense of community to each project. The end result was nothing short of exceptional. Our job is to continue to uncover this middle school talent and raise awareness on the opportunities out there in engineering."

Miller adds that more can be done at the federal and state level to make sure these subjects are getting the proper amount of time and commitment in the classroom.



The competition allows students to interact with peers from around the world and share results via an online forum (courtesy of Honeywell International).

"We pay a lot of lip service on these issues," Miller says. "We talk about how important STEM programs are to the next generation, but the world is clearly not doing enough to get the message out. More needs to be done to bring industry into the classroom."



The winning car from each class was entered into a global contest to compete against other schools (courtesy of Honeywell International).

Miller deems these engineering education programs vital to the future of engineering and manufacturing.

“It’s one of the most important things we do at the SAE, promoting these areas globally and working with manufacturing companies to develop the next engineering workforce. Programs like this give kids the knowledge, experience and appreciation required to work in these fields.”

But can an eight-week program influence an 11-year-old toward a career in engineering and manufacturing?

“Our chief technology officer at Honeywell, Karl-Heinz Bauer, has said that an engineering competition in middle school inspired him to be an engineer,” Toubes says. “It’s taking math and science, which some kids may find dry subjects, and making them fun.”

Competitions like this are also beneficial for the teachers. A unique and diverse education community was formed when Honeywell and the SAE brought all the participating teachers together at Honeywell’s site in New Jersey for training sessions to learn the curriculum.

“The teachers seemed to be just as enthusiastic and excited as the students,” Miller says. “It’s a nice change of pace when you’re giving educators a unique way to present these lessons in the classroom.”

Adds Toubes, “What we have heard from teachers is that they are always looking for new ways to teach math and science. I think programs like this that meet such high curricular standards are a helpful tool to boost learning.”


The feedback from the program has been outstanding, according to both Miller and Toubes.

“In Torrance, a parent told us, ‘Your program works! My daughter wanted to be a chef; now she wants to be an engineer.’ We have also received e-mails from schools and individual parents not affiliated with the program asking us how they can participate or get the program in their school,” Toubes says. “It makes learning math, science and engineering principles fun. It challenges students to be innovative and demonstrates how these lessons can be applied to their everyday lives.”

Miller believes the current crop of middle school kids with an interest in engineering and manufacturing will be vital in changing the way the world

conducts business.

“When you start talking about alternative fuels, the green movement and urban development, it’s this generation that’s going to have to find a way to fix things.”

For more information on the Student Automotive Design Challenge and to look at photos of some of the participating classrooms, visit www.honeywell-sae.com. 

Be Proactive

The Society of Automotive Engineers (SAE) is always looking for assistance from the manufacturing community when it comes to student engineering programs. “We’re trying to offer as many options and opportunities to college, high school and junior high students as possible,” says Matthew Miller, director, SAE Foundation and pre-college programs. The SAE Foundation serves today’s students in an effort to help them become tomorrow’s engineers and scientists. Miller believes both the industry and education communities play a vital role in preparing students to become the next generation of innovators. It starts with funding STEM education programs or volunteering your time and expertise to local competitions.

Supported programs include the award-winning A World in Motion (AWIM) curriculum that blends science and mathematics into age-appropriate design challenges and the Collegiate Design Series (CDS) that allow engineering students to receive hands-on experience in the design, manufacture and testing of real vehicles. The SAE Foundation also offers a full program of scholarships, grants, loans and award opportunities for high school seniors, undergraduate and graduate engineering students and professionals.

“In the simplest sense, we’re trying to provide a sense of practicality for students in regards to science and math,” Miller says. “This wouldn’t be possible without the help of our corporate sponsors and volunteers.”

If you’re interested in working with the SAE Foundation on student engineering and manufacturing initiatives contact the SAE at (724) 722-8515 or visit www.sae.org.